Claims

1. A vehicle rollover sensing apparatus for generating a safing signal, said rollover sensing apparatus comprising:

an accelerometer located on a vehicle and comprising a first acceleration sensor oriented in a first axis at an angle offset from the longitudinal axis and lateral axis of the vehicle, said accelerometer sensing a longitudinal component of acceleration of the vehicle and a lateral component of acceleration of the vehicle; and

control logic for receiving the sensed acceleration signal and generating a safing signal as a function of at least one of the longitudinal and lateral components of acceleration.

2. The rollover sensing apparatus as defined in claim 1, wherein the accelerometer further comprises a second acceleration sensor located on the vehicle and oriented in a second axis at an angle offset from the longitudinal axis and lateral axis of the vehicle, said second acceleration sensor sensing a longitudinal component of acceleration of the vehicle and a lateral component of acceleration of the vehicle.

3. The rollover sensing apparatus as defined in claim 2, wherein the accelerometer comprises a dual-axis accelerometer providing the first and second acceleration sensors for providing the first and second acceleration signals.

4. The vehicle rollover apparatus as defined in claim 3, wherein the dual-axis accelerometer comprises a low-g accelerometer.

5. The rollover sensing apparatus as defined in claim 2, wherein the first and second accelerometer sensors are oriented such that the first axis is substantially orthogonal to the second axis.

6. The rollover sensing apparatus as defined in claim 5, wherein the first axis is oriented at an angle approximately 45 degrees relative to the longitudinal axis of the vehicle, and a second axis is oriented at an angle approximately 45 degrees relative to the longitudinal axis of the vehicle.

7. The rollover sensing apparatus as defined in claim 1, wherein the safing signal is processed with a rollover discrimination signal to generate a vehicle overturn condition signal as a function of the rollover discrimination signal and the safing signal.

8. The rollover sensing apparatus as defined in claim 7, wherein the overturn condition is a vehicle rollover about the longitudinal axis of the vehicle.

9. The rollover sensing apparatus as defined in claim 1, wherein said roll arming logic compares at least one of the longitudinal and lateral components of acceleration to a threshold value.

10. A rollover sensing apparatus for detecting an anticipated overturn condition for a vehicle, said apparatus comprising:

at least one sensor located on a vehicle for detecting a vehicle roll characteristic;

rollover discrimination logic for generating a rollover discrimination signal;

an accelerometer located on a vehicle and comprising a first acceleration sensor oriented in a first axis at an angle offset from the longitudinal and lateral axes of the vehicle, said accelerometer sensing a longitudinal component of acceleration of the vehicle and a lateral component of acceleration of the vehicle;

safing logic for processing the sensed acceleration signal and generating a safing signal as a function of at least one of the longitudinal and lateral acceleration components; and

control logic for processing the discrimination signal and safing signal and generating a vehicle rollover output signal.

11. The rollover sensing apparatus as defined in claim 10, wherein the apparatus further comprises a second acceleration sensor located on the vehicle and oriented in a second axis at an angle offset from the longitudinal axis and lateral axis of the vehicle, said second acceleration sensor sensing a longitudinal component of acceleration of the vehicle and a lateral component of acceleration of the vehicle.

12. The rollover sensing apparatus as defined in claim 11, wherein the accelerometer comprises a dual-axis accelerometer providing the first and second acceleration sensors.

13. The vehicle rollover apparatus as defined in claim 12, wherein the dual-axis accelerometer comprises a low-g accelerometer.

14. The rollover sensing apparatus as defined in claim 11, wherein the first and second acceleration sensors are oriented such that the first axis is substantially orthogonal to the second axis.

15. The rollover sensing apparatus as defined in claim 14, wherein the first axis is oriented at an angle of approximately 45 degrees relative to the longitudinal axis of the vehicle, and a second axis is oriented at approximately 45 degrees relative to the longitudinal axis of the vehicle.

16. The rollover sensing apparatus as defined in claim 10, wherein said control logic comprises a logic AND gate.

17. The rollover sensing apparatus as defined in claim 10, wherein said rollover sensing apparatus determines a rollover condition of the vehicle about the longitudinal axis of the vehicle.

18. The rollover sensing apparatus as defined in claim 10, wherein said control logic compares at least one of the longitudinal and lateral components of acceleration to a threshold value.

19. A method of generating a safing signal for use in detecting a vehicle rollover, said method comprising the steps of:

sensing longitudinal and lateral components of acceleration of a vehicle via a first acceleration sensor located on the vehicle and oriented in a first axis at an angle offset from the longitudinal axis and lateral axis of the vehicle; and

generating a safing signal as a function of at least one of the sensed longitudinal and lateral components of acceleration.

20. The method as defined in claim 19 further comprising the step of sensing longitudinal and lateral components of acceleration of the vehicle via a second acceleration sensor located on the vehicle and oriented in a second axis at an angle offset from the longitudinal axis and lateral axis of the vehicle, wherein the safing signal is generated as a function of at least one of the sensed longitudinal and lateral components of acceleration generated by at least one of the first and second acceleration sensors.

21. The method as defined in claim 20, wherein the steps of sensing longitudinal and lateral acceleration of the vehicle via the first and second acceleration sensors comprises sensing longitudinal and lateral components of acceleration via a dual-axis accelerometer.

22. The method as defined in claim 20, wherein the first and second acceleration sensors are oriented substantially orthogonal to each other.

23. The method as defined in claim 19 further comprising the step of determining a vehicle rollover event as a function of the safing signal.

24. The method as defined in claim 19 further comprising the step of processing the safing signal with a rollover discrimination signal to generate a vehicle overturn condition deployment signal as a function of the rollover discrimination signal and the safing signal.

25. The method as defined in claim 19, wherein the overturn condition is a vehicle rollover about the longitudinal axis of the vehicle.

26. The method as defined in claim 19 further comprising the step of comparing at least one of the longitudinal and lateral components of acceleration to a threshold value to determine the safing signal.